AUDIO FOR BROADCAST, POST, RECORDING AND MULTIMEDIA PRODUCTION

resolution

V13.5 JULY/AUGUST 2014

26 Review: Radial Six Pack & Powertube
28 Review: API Lunchbox 8C, 505-DI & 565
30 Review: Roll Music Valvop
30 Modular processing gear
39 Inside and behind the rack

Radial Six Pack & Powertube

Radial has yet another rack and yet another module to add to its portfolio of 500 series units. JON THRONTON

The Powertube is one of a rapidly growing number of 500 series modules produced by Radial Engineering. The range, comprising repackaged versions of existing Radial boxes plus some brand new additions now numbers some 18 different modules — no doubt due in part to the introduction of its own 500 series chassis products under the 'Workhorse' banner *(And there are six variations of the racks. Ed)*. The most recent of these — the Six Pack — was used for the review, and that's important as it unlocks features in the Powertube and other Radial 500 series modules that other chassis designs may not.

As its name suggests, the Six Pack is a compact chassis that houses up to six compatible modules and in broad terms these are any 500 series modules. An external power supply connects via a five-pin XLR connector, and the supplied carry handle can be attached to the top or the side of the chassis depending on preference. Of particular note is the capacity of the supply — 1600mA is available to share between the six slots.

At one level it looks pretty straightforward, a balanced input and output to each card are provided on XLRs and ¼-inch TRS jacks wired in parallel but Radial has added some interesting tweaks to this standard theme. For ease of connection to, for example, a DAW interface, eight inputs and outputs are also provided on DSUB connectors. The first six of these logically connect to the six slots, the remaining two inputs from the DSUBs are available on the rear panel on balanced jacks, and a pair of additional front panel XLRs can be routed to the 'spare' DSUB outputs.

Each of the six slots also has a slide switch on the rear panel allowing it to feed its output to the input of the next slot along — useful for recording chains made up of individual modules without a mess of patch leads at the rear. But perhaps the biggest change — and one that moves slightly away from the original 'standard' — is the provision of an additional rear panel connection for each module, dubbed the OmniPort. A ¼-inch stereo jack, the Omniport function is entirely down to the module manufacturer. For example it could be used as an (unbalanced) sidechain access point for a compressor, as an external key-input for a gate, an insert point or an additional input. While the majority of Radial's own modules obviously exploit this feature, they are also encouraging other 500 series manufacturers to adopt it by publishing the specs in an Open Source document (Workhorse Open Source Document).

The Powertube module is a tube-based Class A preamp. Front panel controls are extremely straightforward — a continuously variable pot effectively trims the input to the initial tube stage by up to 60dB, while another pot sets up to 60dB gain from the discrete, Class A output stage. Output level metering is via a 10-segment LED ladder working across a range of -20 to +6dBu. Given that the aforementioned gain staging is clearly an inducement to drive the Powertube as hard as you dare, it would have been useful to have the upper range of this extended somewhat. The display is also configured so that only one segment lights at a time, rather than building up from the left hand side. This works fine up close, but you do lose the sense of 'size' of signal when squinting at a distance.

Below the gain pot are two pushbuttons to engage filters in the signal path. The first is the ubiquitous HPF (100Hz @ 6dB/octave), while the other, labelled 'Air', adds a gentle presence boost centred around 8kHz or so. Finally, a recessed pushbutton (you need a pen/matchstick/tweaker to operate it) engages phantom power. While I can see the thinking behind this in terms of reducing the chance of accidentally applying phantom to an aged ribbon mic, after a while it can get a little tiresome hunting around for a suitable poking implement.

As well as the front panel controls, there are a couple of slide switches on the rear of the PCB at the back of the module. The first of these is a hard earth lift on the inputs — only really useful for feeding line level sources or dynamic mics at a push, as phantom power is going to disappear if it's engaged. The second determines which of the two audio power rails will be used to power the tube's heater (+16 or -16V). This enables this part of the total module current draw to be balanced between the two rails — useful if your chassis is populated with multiple Powertubes.

Internally, the Powertube uses a Jensen input transformer that feeds a 12AX7 tube, followed by a Class A discrete gain stage. If the Six Pack chassis didn't already provide enough input options, there's also a front panel XLR input on the module itself. The OmniPort function in this case provides a DI input on the rear — inserting a jack in here engages a relay that disconnects the balanced input and presents the DI input directly to the transformer.

Plugging in a C414 for reference, and with the trim control set halfway, initial impressions are of a robust sound that's reasonably quiet and open. Noise does increase as the trim control is turned up and the tube stage driven harder, along with progressively increasing amounts of harmonic distortion. Adjusting the relative settings of trim and gain gives a very broad palette of sonic permutations, ranging from clean to slightly warm to positively grungy on line level sources (which the Powertube deals with quite happily). In practice, unless really going for effect, I found that the best results on most sources were found in the bottom half of the trim control's travel. Nevertheless, Radial also ships an additional ToneBone distortion pedal tube with the module for additional possibilities (the tube is socketed on its own circuit board inside the module, so swapping it out is pretty straightforward). The 'Air' presence boost is a useful feature, particularly when exploring the cleaner end of the tonal range. It's a fairly subtle little boost, but actually more generally useful as a result.

I was less enamoured with the DI input which sounded a little too 'soft' for some applications — I suspect as a result of the relatively low (150kOhm) load impedance of the DI stage. While this gave a nice smooth tone on DI bass, it lacks a little detail on other sources, although dialling in a little extra tube drive in conjunction with the Air setting helps here.

The Powertube is unashamedly old school in approach, and coupled with the no-nonsense we've come to associate with Radial Engineering, it's safe to say that it isn't something you are going to turn to for subtlety. But for a flexible, characterful and compact preamp it will find a lot of friends.

PROS	**Wide sonic palette; robust sounding; flexible gain staging for working with line and mic sources; Air filter subtle and useful; flexible routing and I-O options on Six Pack**
CONS	**DI input a little 'soft' sounding for some applications; metering could have a wider range; phantom power switch a bit fiddly.**

Contact

RADIAL ENGINEERING, CANADA
Web: www.radialeng.com

Track Record.

With thousands of hits recorded on hundreds of API consoles,
the 1608 is continuing the tradition of providing warm, analog sound
to the next generation of success-driven professionals.

The API 1608

16 to 48 channels, with or without P-Mix

analog warmth for a digital world

api

www.APIaudio.com

SOURCE

Exclusively distributed in the UK and Ireland by Source • www.sourcedistribution.co.uk • T: 020 8962 5080

API Lunchbox 8C, 505-DI, 565

In a rare flurry of activity API has launched a new 500 series power rack and a pair of new 500 Series modules. GEORGE SHILLING

Of course, API invented the modern modular 500 series format many years ago, but in recent times there has been an explosion of third-party racks and modules to rival the originals. These new additions perhaps represent something of a response from the proud parents.

Lunchbox 8C — The 8C uses an apparently similar sized case to the existing 6-slot Lunchbox design (the 500-6B) but adds a further two slots. Amazingly, the price of the 8C is exactly the same as the still available 6-slot version but you will not be surprised to learn that there have been some compromises to achieve the price point. The PSU is now outboard and this has freed up the space for the two extra slots. An inline brick is unusually actually badged as API, which is most helpful when rummaging around racks and boxes of PSUs. It has an IEC inlet socket and supplies power with a five-pin female XLR on a flying lead to plumb into the back of the rack case. A casualty of this change is the missing Power button — there is none, front or rear, which might be a nuisance, particularly if you want to install valve-based third party modules and don't want them permanently switched on. Apart from the aforementioned power connector, there are no XLR connectors on the rear of this box; inputs and outputs are now accessed solely with a pair of DB25 connections. Clearly costs have been saved here but you do get a set of toggles to feed audio from each slot to the one on its right, albeit less than conveniently placed on the rear panel. The rack unit comes supplied with a large handle bolted to the left side, and rubber feet on the opposite end and the bottom allows for either orientation. A rack ears kit is available, so if you remove all those accoutrements and follow the necessary instructions, you can slot this into a 19-inch space, 3U high, although you might want to consider the (albeit rather pricier) dedicated 19-inch 500VPR 10-slot model with integral PSU. Bear in mind though, as you bolt this into your rack, you'll likely be saying farewell to those Link toggle switches. There are modern rival units with more whizz-bang features, but at UK£341 + VAT this is keenly priced, reassuringly sturdy, and should ward off some of the competition.

PROS	**Good value — lower price per slot than rivals from the inventor of the 500 series format.**
CONS	**Only DB25 connections; no power button.**

505-DI — This module appears to expand on the concept of the 205L which is a 200 Series module, the 'baby brother' format to the 500 Series used in current large format API consoles. No input signal is derived from the 500 Series rack rear, you must instead plumb something into the front panel instrument jack labelled Hi-Z In, the socket ingeniously illuminates from within the hole by a blue LED. This is a gimmick, but it does help you easily identify the correct socket from the excellent addition to the 205L: a Thru jack socket, which simply parallels the input. This feature is very useful in a recording scenario, e.g. when tapping off a DI bass guitar signal for recording but also routing it onwards to an amplifier. On the host rack, this DI module outputs line level signal, so you can feed this straight to the recorder. A blue topped Gain knob at the top is scaled 0 to 10, but this is not a fader, i.e. turning it to zero does not mute. It does provide oodles of boost though (up to 55dB of gain) and there is an excellent clearly labelled 10-segment LED meter (plus a Peak LED) to

Serious 500 Series PowerTools...

PowerTube™
tube preamp

A single-slot tube pre with 100% discrete design and high performance Jensen™ input transformer. A premium 12AX7 tube drives an ultra low-noise class-A output circuit, delivering exceptional warmth and detail. Features easy to read 10 segment LED meter, a high pass filter to eliminate resonance and an 'air' switch to lift top end for added clarity.

PowerPre™
mic preamp

The PowerPre is a 100% discrete mic preamp with an old-school Hammond™ broadcast transformer for ultra-warm tone. The Radial PowerPre features Accustate™ gain control for lowest noise at any setting, Vox Control for added breath or extra punch, a high-pass filter to eliminate resonance, a 10 segment LED meter display for easy read-out and plenty of gain to handle any situation.

Q4™
state-variable parametric

The Radial Q4 state-variable class-A parametric equalizer. is constructed using 100% discrete electronic parts. This unique design enables component level control over individual gain stages, which eliminates the need for excessive use of tone-robbing negative feedback, making the Q4 the most natural sounding EQ ever! Features include high and low shelving with parametric control over the low and high mid regions.

"The PowerPre is a must hear. I got great results, particularly in high transient situations where you can drive it hard for more transformer color. I bought one."
~ Mix

"The PowerPre is a fine example of a well designed, low-noise mic preamp that can give a bit of 'meat' or 'air' when needed. It may well be your preamp of choice."
~ Electronic Musician

"Using the EXTC, I was surprised at how quietly most guitar pedals can perform, and this got me digging out some neglected cories which sounded stunningly clean and juicy."
~ Resolution

"The Q3 behaves like no EQ I have ever used... it can be a bit tricky at first, but it turns into a fun 'turn the knobs until something cool happens' type of box."
~ Professional Sound

"It took me about 10 seconds to land on something that worked perfectly. The Q3 is a useful, refreshing and simple tool. And it's fun."
~ TapeOp

jensen transformers INSIDE

keep tabs on the output level.

A white Tone knob is calibrated as Thin on the left, Fat at the top, and Fatter at full-tilt. In actual fact, this is a mud-removal shelving EQ circuit, with anything less than Fatter reducing sub 150Hz signal by up to 12dB at the Thin end. The Bright toggle switch boosts the highs with a shelf from around 8kHz by about 7dB, adding terrific life and sparkle to guitars. This is most welcome, and like traditional API EQ doesn't sound harsh or at all spiky. An On button illuminates yellow when pressed; this is a very handy way of quickly muting the output before your talent plugs in or unplugs their end of the jack cable. Further toggles provide a 20dB Pad that apparently doesn't affect the load — useful especially for high output keyboard instruments — and a Load selector to switch between 100kOhm and 400kOhm. The latter setting is generally preferable; it's subtler than the Bright switch, but the former slightly darkened the tone and reduced the level of my Telecaster.

The sound is solid, musical, and as reassuringly smooth and stable as you come to expect from API. The tonal variations available are useful, and it is quick and easy to make decisions with just one Tone knob and a couple of toggles to vary things. The Bright circuit is smooth and brings an openness to the tone. The Tone knob does a great job too, with a beautifully linear gradation as you turn it to find the sweet spot. Even when recording bass guitar, settings lower than Fatter can usefully tame any low end waffling. At £408 + VAT the 505-DI isn't cheap, but this is a tool of the highest quality.

PROS	**Solid sounding DI preamp; line level output; useful Thru jack; plenty of gain; flexible tone shaping.**
CONS	**No ground lift.**

resolution AWARDS 2014 • NOMINATED • REWARDING QUALITY AND INNOVATION

565 — This new module comprises High Pass, Notch and Low Pass Filters, expanding on the 215 filter module found in API's large desks. Unlike the 505-DI, the 565's circuitry is completely encased in thin steel. On the front are four familiar looking blue-topped API knobs. I love API knobs; they look like something from the TARDIS and have huge protruding pointers that you can steer the knob round with. Unlike the usual clicky switched settings found on 550 EQ modules, the 565's are all continuous sweeping pots with no damping. The top one is the Low Pass control, calibrated from 500Hz to 20kHz. A tiny toggle marked In enables the filter, and there is a similar one to select between -12dB per octave and -6dB per octave operation. Some very gentle reduction of nasties is possible here, or you can achieve more robust taming of unwanted harshness. The next section is a variable Notch filter. When the In toggle is enabled, the selected frequency is notched out. At fully clockwise, the notch is pin-sharp, as narrow as a needle (Q factor is quoted as 20) gradually widening towards a broader dip when counter-clockwise. At the broadest setting, the Q is 0.65, which cuts a huge 40-50dB swathe at the selected frequency. The frequency is selected with a knob calibrated from 20Hz to 200Hz, with a three-position multiplier toggle for x1, x10 and x100, thereby covering the entire audio spectrum while allowing the user great precision. Sweeping with the Notch near the narrow end creates a pseudo-phasing effect, while turning the Notch further left allows great wodges of the spectrum to be pulled out.

Finally there is a High Pass filter knob scaled from 20Hz to 600Hz, with an In toggle and a choice of -12dB or -18dB per octave on another switch. This works well for cutting out undesirable lows, and even in its steepest mode manages to sound clean and smooth. The filters don't sound at all phasey (unless you sweep a narrow Notch of course). Clearing some low-end mud is always satisfying. Sometimes counter-intuitively, clearing some 'air' with the Low Pass is also surprisingly pleasant and doing this on some instruments can help bind the mix. With the High and Low filters almost meeting, you can get some good telephoney sounding effects. All toggles operate silently with no drama, and the knobs are a pleasure to twiddle. This is a super-smooth and wonderfully useful module with great sonic integrity, and fabulous sounding filtering, all for £408 + VAT.

PROS	**Great sounding filters; powerful Notch covering the entire audio spectrum.**
CONS	**None.**

Contact

API AUDIO, US
Web: www.apiaudio.com
UK, Source: +44 208 962 5080

...for Power Players!
Q3™
inductor coil EQ
The Q3 is a 100% discrete passive coil EQ designed to push creativity to the max! It features three EQ bands with 12 low, 12 mid and 12 high frequency preset curves. These curves are combined together to create complex tonal structures without the phase anomalies associated with today's typical gyrator circuits. Miniature 'shift' switches on each band deliver a total of over 13,800 EQ combinations.
EXTC™
guitar effects interface
The EXTC is a unique device that lets you interface high impedance guitar pedals with the world of professional balanced audio. It features easy access front panel ¼" connectors for quick set-ups plus individual send, receive and wet-dry controls to optimize the signal path. The effects loop is transformer isolated to help eliminate buzz and hum caused by ground loops.
Tossover™
frequency divider
Works double duty as filter or frequency divider! As a filter, you can set it to 12, 18 or 24dB per octave slopes to roll off unwanted frequencies or create a band-pass filter to accentuate the mid range. As a frequency divider you can pull apart the bass and highs and process them separately to apply effects to one register while leaving the other alone. Think outside the box.
Radial engineering
...PowerTools for power players™
radialeng.com
1588 Kebet Way, Port Coquitlam BC V3C 5M5 tel:604-942-1001
* Specifications and appearance subject to change without notice.

Products

Recent module introductions.

Solid State Logic

The X-Rack Stereo EQ Module is a stereo version of the XL 9000 K Channel Equaliser as used on Duality and AWS consoles. It is a 4-band parametric EQ with high- and low-bands switchable between shelving or fixed Q bell curves and two mid-bands with variable Q controls. The stereo version introduces a 'Selective Mode' switch that enables independent switching of high and low bands and mid bands between SSL's E and G series console EQ characteristics. Rear panel connections are on balanced TRS jacks and Total Recall status LEDs are included. The X-Rack Stereo Dynamics Module delivers the same sonic signature as the channel strip processing of SSL's large format Duality console and the mono X-Rack SuperAnalogue Dynamics Module in a stereo configuration. The module is intended for stereo tracking or stem mixing. The Compressor section can switch between a gentle Soft Knee (Over Easy) RMS compression to a more aggressive Peak Sensing or Hard Knee mode, making for a wide range of levelling control. The secondary circuit can function as a Noise Gate or an Expander. The feature set is complemented by an External Key Input (mono), for triggering the unit from an external sound source, and the ability for multiple adjacent units to be linked.

SSL also has 500-S format modules of its E series Dynamics and EQ. The 611DYN reproduces the SL 4000 E console channel strip with a compressor/limiter and an expander/gate. An RMS convertor is used in the sidechain while the gain element is a discrete design identical to the Class-A VCA chip used in the original unit. The compressor contains additional switching options to defeat the over-easy curve and to use a linear release instead of the more usual logarithmic curve. The 611EQ E series EQ Module has the two different EQs found on editions of the console produced between 1981 and 1989. The type of EQ fitted in a console was distinguished by the colours of the LF knob caps and became known as Brown and Black. The module allows users to switch between the two. It is 4-band with a bell curve option on the HF and LF and parametric LMF and HMF with Q. SSL's Stereo Bus Compressor, the centre section from the 80s-vintage G series console, is also available in 500-Series format as the G COMP module featuring six ratio settings and five release settings plus an Auto Release function.

www.solid-state-logic.com

Sonic Farm

Silkworm is a solid state microphone and instrument preamp. It uses a discrete servo-controlled gain stage and a transformer on input and output. The output can be switched to a solid state balanced line driver, bypassing the transformer, for a more open sound. A 3-position 'vibe' switch enhances the tonal palette and helps tailor the sound to suit an application.

www.sonicfarm.com

Roll Music Valvop

Simple and superbly characterful compression is what this unit is all about. GEORGE SHILLING enthuses.

Roll Music Systems in Minneapolis originated as a recording studio in 1998 but founder Justin Ulysses Morse turned to gear design and manufacture, with products available since 2003. Best known are the RMS-216 Folcrom passive summing mixer, and the RMS-755 Super Stereo Compressor (*Resolution* V6.5) looked at previously. A few years back they turned to the 500 Series format with the RMS-5A7 Tubule microphone preamp. Similarly styled, using the same amplifier circuit, and officially called the RMS-MC5, the Valvop (UK£700 + VAT) is an optical valve compressor. Built like the proverbial brick outhouse, with ten screws and four Allen bolts holding the case together *(Doesn't sound much like an outhouse to me. Ed)*, it boasts a super-thick stainless steel front panel, big metal knobs, and old skool latching 'winkie' pushbuttons. This thing manages to look big and proper, unlike most fiddly 500 Series modules, and feels incredibly well screwed together. Internally, a perpendicular circuit board 'ledge' is bolted onto the main board for the mounting socket for a JJ brand ECC832 valve, keeping it upright when the module is conventionally orientated in, say, a Lunchbox. I tested the Valvop in an API 8C and a Radial Six-Pack Workhorse, and amazingly the module's circuitry manages to convert the input power to the necessary high voltage (220V) to properly drive the valve while staying well within 500 Series spec. Discrete components are mounted on the main board, including some sizeable custom transformers, and there are a further couple of small 'ledges', at least one of which includes surface mounted chips.

The big black knurled Threshold knob is calibrated with 11 dots; turning anticlockwise lowers the threshold and increases compression. The similar style knob at the bottom is switched Gain make-up and this clicks between 12 positions (corresponding dots on the panel) in 2dB steps from -2dB to +20dB. The clicks are quite chunky and there is no danger of accidental movement here.

Between the knobs are two buttons and a light. PDR is Programme Dependent Release and switches the compressor to a dual release mode where compression of short transients recovers quickly while long passages of loud material are given a slower compressor release. The large amber light is actually a big LED that glows to indicate gain reduction and that's all you get for metering. However, the light's intensity varies rapidly with the signal, and gives a good indication of how the compressor will behave — this is an optical compressor after all. Below this is a second pushbutton which bypasses the compressor (but seems to add about 2dB of gain).

Roll Music suggests vocals and electric bass as suitable applications. On a smooth alto female vocal, which had been recorded with a touch of 1176, the transformer-coupled Valvop immediately lent a gorgeous warmth to the sound. Smooth and rich compression is achieved but the sound remains coherent wherever the Threshold knob is, thanks to a fairly fast attack. Level reduction is easily compensated for using the Gain knob. The vocal sat beautifully in the track with moderately high compression and little or no level riding required. Certainly, there are similarities here to LA-2A type units, especially in PDR mode. This makes the compression a little less audible and pumping, and the sound perhaps even more smooth and delicious. A punky, shouty and slightly thin-sounding high male vocal with huge dynamic range was satisfyingly thickened with a hefty dose of PDR. Bass guitar is indeed a great candidate for some Valvop, sounding big, warm and juicy but perhaps my favourite use was for acoustic guitar. When compressing heavily, PDR mode reduces some of the percussion of strummed chords for a really smooth texture. If you want a bit more punch from the guitar, then unlatching the PDR button is the way to go. But either mode is gorgeous, however hard you drive the compression — this unit seems to invite you to go further and further, and sometimes the maximum setting still isn't too much. A conventional meter would probably be worrisome here, so it's probably best that there isn't one! The amount of make-up gain to roughly match levels was often at +12 or 14dB. The release is rather slow for crazy drum ambience, but it successfully warmed up a room mic, bringing a lovely low-mid glue to the kick and snare.

Always a fan of rock music, I'm now also a fan of Roll Music, and especially the Valvop, which is the best and biggest-sounding 500 Series compressor I've heard.

PROS	**Luscious valve optical compression; PDR setting provides superb alternative character; robust build; no fiddly toggle switches; huge sound from a little module.**
CONS	**One of these might not be enough.**

Contact

ROLL MUSIC, US
UK: KMR Audio: +44 208 445 2446

Spotlight: Elysia

The most recent addition to Elysia's line of 500-Series modules are the xfilter 500 and nvelope 500. Elysia's xfilter 500 is a true stereo EQ with an all Class-A audio path. It offers high- and low-shelf bands, both of which can be switched into high- and low-cut filters with resonance — a feature from the flagship museq EQ. The xfilter 500 also provides two mid-peak filters with wide or narrow Q. It has a switchable fixed LC filter for the high frequency and this passive filter consists of a capacitor and a coil per channel that produce a slight resonance peak around 12kHz. By linking its two channels, the xfilter 500 eliminates the task of matching settings. The potentiometers are stepped.

The nvelope 500 is a two-slot-space stereo dynamics processor capable of making subtle or drastic changes to a sound by altering its impulse structure, providing direct control over the envelope of a signal by shaping the intensity of its attack and sustain. It is primarily intended to shape individual signals, but it can be used in mixing as well. Another powerful feature is the enhanced tweakability offered in Dual Band mode. Individual frequency controls for attack and sustain yield precise results while avoiding unwanted artefacts — even when used on complex material like a summing bus. The nvelope 500 offers dual mono or linked stereo operation in Full Range, Dual Band, or EQ modes.

www.elysia.com

Drawmer

The DS101 500-Series noise gate features the frequency conscious gating functionality of Drawmer's DS201. The DS101 is based on a single channel of the DS201 and incorporates fully variable high- and low-pass filters and key listen monitoring. The DS101, which can be used for gating and ducking, has controls for threshold, attack, hold, decay, and range, as well as Drawmer's traffic light metering. When installed next to each other in a 500-Series rack, two or more DS101 gates may be linked using Drawmer's new infrared triggering mechanism. Linked in this fashion, the envelope shaping capabilities of many DS101 gates may be adjusted independently while the trigger pulse passes through unchanged.

www.drawmer.com

Great River Electronics

The PWM-501 is an ultra-fast compressor. With its Feed-Forward and Feed-Back control, users effectively have access to two totally different sounding compressors. When engaged, a second order (12dB/octave) variable HPF is inserted in the sidechain immediately after the Feed-Forward and Feed-Back blend circuit to filter out bass signals that might otherwise influence the action of the PWM-501. The Threshold control determines the portion of the signal that the rest of the sidechain will use to control the operation of the PWM-501. At low levels the unit looks at all or most of the signal and acts as a compressor; at higher levels it looks at peak and functions more as a limiter. Alongside Ratio, Attack time, and Release time controls, a Link switch links the control voltage between multiple PWM-501 units installed in a rack with the correct interconnections on the backplane bus. One unit can be used to control all others, or each can contribute. This control voltage is unique to the PWM-501 and is not compatible with systems from other manufacturers. Display LEDs operate according to whatever meter mode is used.

www.greatriverelectronics.com

Kush Audio

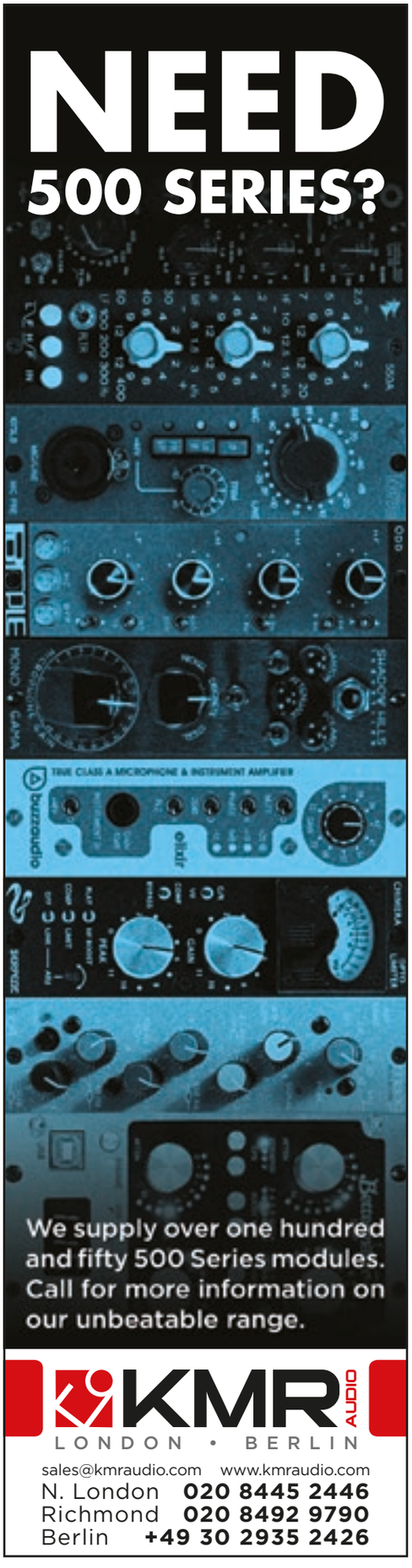
Kush Audio's Electra is a 4-band, 'multitopology' EQ that has two sweepable, overlapping Proportional-Q bands whose bandwidth and gain have been tailored to allow for extreme pushes. Rounding out the bottom is a fixed low shelf that interacts with the continuously variable (25-400Hz) 12dB/octave HPF. Topping it off is a sweepable (3.4-20kHz) high shelf reminiscent of vintage mastering equalisers. A switchable Fader Mode converts the low shelf knob into a fader so multiple Electras can be used to create lunchbox-based mixers with fader and EQ. The popular Clariphonic Parallel Equalizer has also received the 500-Series 'shrinkage' treatment to re-emerge as the Clariphonic 500 with two high-shelves blended in parallel on each channel; six corner frequencies; powerful control over the midrange, presence, and air bands; and ability to solo the parallel filters for external sweetening and processing.

www.thehouseofkush.com

DAV Electronics

Inspired by the DAV Electronics BG 3 (Broadhurst Gardens No. 3) mastering EQ, the BG 503 EQ is a 500-Series module. Low and high frequency bands use a shelf curve with +/-8dB of gain and stepped frequencies ranging from 12.5-400Hz for the LF band and from 2-32kHz for the HF band. The mid band uses a resonant design with its bandwidth narrowing when reaching the extremes of its +/-12dB of gain. Stepped frequencies are also used and range from 240Hz-5kHz offering useful overlapping of frequencies between bands. The BG 504 (Broadhurst Gardens No. 504) is an optical limiter/compressor, featuring electronically balanced inputs and outputs, low noise/distortion, LED GR meter, stereo link, and a total bypass.

www.davelectronics.com


NEED
500 SERIES?
We supply over one hundred and fifty 500 Series modules. Call for more information on our unbeatable range.
KMR AUDIO
LONDON • BERLIN
sales@kmraudio.com www.kmraudio.com
N. London 020 8445 2446
Richmond 020 8492 9790
Berlin +49 30 2935 2426

AEA

The RPQ500 is based on the full-rack RPQ preamplifier and provides the same ultra-clean, high-gain signal path, but with enhanced and additional features for compatibility with a 500-Series rack. With 80dB of JFET gain and NoLoad input impedance, the CurveShaper offers a natural option for sculpting sound at the start of the signal path. Switchable and tuneable LF and HF contour controls allow engineers to tame proximity problems and provide HF extension and slope control. The high-frequency CurveShaper excels in adding a touch of air or presence, and the low-frequency control can remove boxiness. The Line/Mic switch bypasses the microphone gain stage and allows the EQ to be used for tracking with other preamps or during mixdown.

www.ribbonmics.com

Spotlight: Phoenix Audio

Phoenix Audio's N90-DRC/500 is a 500-Series format compressor and gate designed around a VCA with Class-A discrete input and Class-A transformer-balanced output. The progressive curves are achieved using linear detection combined with logarithmic attenuation inside a closed control loop with limiter sound provided by the higher ratios and there is a choice of attack times. The gate is more conventional, but its release time is composite with a hold time followed by a fade time. The DRS-1R/500 mono preamp and DI shares the same feature set and sonic characteristics as its popular 'big brother', the DSR-1, yet runs at 24V, thanks to a special inbuilt power supply.

The DRS-EQ/500 is a mono 4-band EQ. It is designed to be identical to the other Phoenix products in terms of features and sonic characteristics, and includes the same EQ circuit found in the larger DRS-Q4 mk2 Class A Discrete Mic-Pre/DI/EQ. The Gyrator EQ circuit was originally designed around 40 years ago to emulate the characteristics of a coil or inductor EQ circuit without their inherent issues.

www.phoenixaudio.net

AnaMod

AnaMod's XF Tube processor is a model-based analogue processor that emulates a two-stage tube and transformer amplifier. The XF Tube was created using the AnaMod Process, which uses mathematical models to synthesise analogue hardware — in this case, a tube amplifier. Unlike digital plug-ins or processor-based outboard gear, there is no latency and no A-D or D-A conversions. AnaMod also has the Realios line of microphone preamps. The A9031 and A9033 represent very different types of microphone preamps. The A9031 is a copy of the vintage Dick Swettenham Helios design, as modified and used by Lenny Kravitz and his engineer Henry Hirsch. The A9033 is a new concept for a microphone preamp and gain is obtained entirely from step-up transformers and uses no negative feedback. Both preamplifiers are Class-A and discrete transistor. The AnaMod Process was also put to use on AnaMod's A9052 equaliser, a companion 500 Series module to the A9031 Olympic-style microphone preamp, said to be a faithful recreation of the Olympic recording desk equalisers with the addition of wider dynamic range and output drive capability. The equaliser can handle signals roughly 6dB greater than would normally be allowed in the 500-Series due to a step-down input transformer and step-up output transformer, and features the original Olympic 3 transistor gain make up circuit as well as a new Class A output drive circuit. AnaMod's TLCompressor (Tungsten Lamp Compressor) is also part of its Realios line and uses a Tungsten lamp for levelling the gain of an audio signal. This represents a method of audio compression unlike any other and provides distortionless, artefact-free operation for female vocals, bass, and mixes.

www.anamodaudio.com

Pendulum Audio

Pendulum Audio's DS-500 Opto De-Esser is a single-channel, non-tube version of the de-esser in the Pendulum Tube Recording Channel. It uses the same inductive detector and opto-inductive notch filter so it has the same characteristics and a very fast response. By pairing it up with a unity gain Class-A solid-state line stage, the DS-500 retains the transparent character of the de-esser action, while keeping the signal path clean and uncoloured.

www.pendulumaudio.com

Aphex

Aphex's USB 500 Rack bridges the gap between the analogue 500-Series and modern DAW workflows by providing a solution to use 500-Series modules directly with a DAW via USB. Mic preamps can be used as direct DAW inputs or analogue compressors and EQs can be used as hardware inserts while monitoring through the monitor section of the USB 500 Rack that includes Mono and Dim functions along with two independent headphone amplifiers. Modules can be chained in the analogue domain for channel strip operation or linked for stereo compression. The USB 500 Rack also provides balanced XLR connections for use as a standard analogue 500-Series rack. Additionally, Aphex bills its D 500 DUO two-slot receiving frame as being like no other, providing balanced analogue insert jacks to connect processors like equalisers and compressors when two preamp modules are loaded into the rack. If no processors are inserted, the insert send can be used as a secondary output for the module. An SPDIF output derives its signal post-insert to allow for a processed mic pre signal to be converted to digital and sent to a DAW or digital recorder. Analogue and digital outputs are always active.

Aphex now has eight 500-Series modules: JPre 500 Mic Pre; EQF 500 Parametric Equaliser; Dual RPA 500 Mic Pre; A PRE 500 Mic Pre; COMP 500 Optical Compressor; EX BB 500 Aural Exciter/Big Bottom; CX 500; and Project 500. The JPre 500 Mic Pre is inspired by the Aphex 1788A remote controlled preamp while the EQF 500 reissue is a modern take on the Aphex EQF-2 500-Series 3-band equaliser originally introduced in the 80s. Most recently released, the 500 is based on the CX-1 compressor/gate unit — one of the first 500-Series modules, and features the company's patented EasyRider compressor and logic-assisted gate, a Jensen output transformer, and multifunction meter for gain reduction, gating, and output level. The Project 500 is a 500-Series module-sized version of Aphex's Project Channel rack unit. A full channel strip, it includes a Class-A mic preamp, optical compressor, and dual-band semi-parametric EQ.

www.aphex.com

AwTac

AwTac's Channel Compressor is a FET compressor. Transformer-balanced inputs and outputs deliver a big iron sound while discrete transistor amplifiers are used in the audio and sidechain circuit. The FET sidechain affects the gain of the input amp and offers smooth sounding compression akin to that from optical compressors. It uses an adaptive ratio of around 10:1, but starting at 1:1, transitioning to 1.5:1 at the bottom of the soft knee slope, it then increases to 2:1, 3:1, 4:1, 6:1, and finally 10:1. The Gain Reduction meter, in addition to showing how gain reduction is happening, also indicates the ratio being used. The first -0.5 LED indicates a ratio of 1.5:1, the -1dB indicates 2:1 — all the way to -15dB, where the compression will behave as a limiter with a 16:1 ratio. A Blend control enables users to use parallel compression. Unlike traditional mix/dry knobs or crossfaders, the Blend control adds the dry signal back into the compressor while the Output pot controls the amount of compressed signal being let through. Both signals are then sent to an internal summing amp.

The AwTac Channel Amplifier is a double-width 500-Series module with an LCR (left- centre- right-selectable) passive mix bus — just like most mixing consoles up to the late 60s. Its extra width enabled its creator to include an extra set of I-O jacks for a mix bus — connect one Channel Amplifier to another to create a mixer. Other notable features include a line level amplifier, 3-band EQ (with three-frequency Baxandall high and low shelf and an inductor-based 10-band midrange), as well as a DI box.

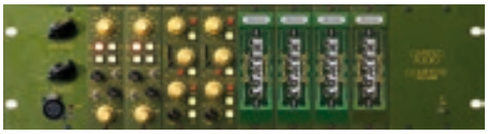
www.awtac.com

Buzz Audio

Buzz Audio's proprietary A-Rack 8+1 can house up to nine of its MA-1.5 mic preamp modules. These modules feature almost identical circuitry to the company's True Class-A NA-2.2 microphone preamplifier, except that the output is electronically balanced. The A-Rack is designed for multichannel recording setups and the MA-1.5 preamp module delivers a punchy and detailed sound. Controls include Gain (+22dB to +70dB minimum in balanced mode, +16dB to +64dB minimum in unbalanced mode), Mute, Phase, Pad, In Z (input impedance), and 48V on/off. As well as the solo monitoring function, each module has a peak indicator that lights up when the output level reaches +18dBu. Quoted frequency response is 2Hz to 250kHz @ 20dB gain (-3dB) and 20Hz to 250kHz @ 65dB gain (-3dB) with harmonic distortion of less than 0.008% (100Hz to 10kHz).

www.buzzaudio.com

Cartec Audio



Cartec Audio's Compere 500-Series enclosure has 8 slots with an internal power supply providing 3A per rail. It has an assignable front panel input XLR in addition to the 8 input and output XLRs. Users can introduce the front panel input signal to any one of the 8 modules via the front panel Aux to the input module rotary switch and associated 48V phantom power switch. This is intended to provide uninterrupted phantom power when switching to different preamp modules. The Aux to output module rotary switch selects which module carries the output and the audio appears on the dedicated rear mounted routing section output XLR. The regular module's XLR I-O audio path is defeated while the Aux Compere function is activated for that module. At the rear of the rack each module slot has a link switch that routes the output of a module into the input of the next module slot on the right. Cartec manufacturers two 500-Series module. The

PRE-Q5 is a transformer-based preamp that incorporates a passive inductor equaliser and a balanced output attenuator. The circuit is identical to the larger PRE-Q1A two-channel high-quality transformer-based microphone preamplifier, but without the High/Low boost front panel controls. The FE-Q5 is an inductor-based equaliser that incorporates a discrete amplifier stage, a 12dB/octave HP filter (independent of equaliser with its own discrete Op-Amp), and custom-wound input and output transformers, plus two multitap inductors and two Op-Amps.

www.cartecaudio.com

Chandler Limited

Chandler's TG2-500 preamp builds upon the TG2 preamp/DI, which delivers the sound of the EMI TG12428 preamp used in EMI/Abbey Road recording and mastering consoles in the late 60s and early 70s. Using the identical TG2 circuit, transistors, and transformers, the TG2-500 delivers 10-60dB of gain and uses a coarse gain control and a fine gain control as found on EMI consoles. The unit provides 300 and 1200Ohm input impedance as on the TG2.

As such, the TG2-500 delivers frequency response identical to the TG2 and has the same high frequency bump and mid forward tone that users enjoy with the TG2.

The Germ 500 MKII is Chandler's well-known Class-A, discrete, transistor Germanium Preamp adapted for 500-Series racks. It uses the same transformers and amp blocks to ensure that it sounds consistent with the 'full-size' rack version and offers -5dB to +65dB gain and a transformer-balanced mic input with 300Ohm impedance.

The 500-Series format Little Devil Pre Amp's Class-A gain stage sounds big, open, and full of life. Just about any parameter of the sound is changeable, including the ability to change both the Feedback and Bias of the amplifier. The Feedback control increases harmonics over the range of the control. Other features include High and Low input impedance, transformer-balanced line in for using the unit as a colour box on mixes or tracks, low cut, and a bright switch.

www.chandlerlimited.com

Empirical Labs

DocDerr is a 500-Series channel strip with six different sections of digitally controlled analogue processing. A low-noise preamp capable of line or 16dB of instrument gain is followed by four sections of EQ offering one selectable high pass and three parametric bands. The dynamics section provides Empirical Labs compression and a tape emulation circuit to soften high frequencies and clips. A Mix knob allows the user to blend the uncompressed EQ signal with the compressed and saturated signal. Inputs and outputs are DC coupled, and the output can be switched between single ended or differential, yielding +/-6dB of gain.

At the heart of Empirical Labs' 1U EL500 rack is a super quiet power supply to ensure optimal performance from any 500-Series compatible device. Two can be accommodated side by side and will flush mount. Additionally, a 1/4-inch instrument preamplifier/DI box is integrated into the front panel. To ensure the best possible enclosure/power supply combo for its own 500-Series modules, Empirical Labs can preload and bundle its DerrEsser and DocDerr modules in any mono or stereo combination along with its EL500 rack.

Empirical Labs also caters to the 500-Series DIY community with its Proto500, a prototyping system for the API 500-Series powered rack system. It includes a PCB card, a metal front panel with mounting positions, and five switches, as well as a user manual. With more than 2700 pads and pre-laid out power supply traces, users can prototype relatively complex circuits for the 500-Series with relative ease. Front panel graphics can be pressed or silkscreened on for a professional look to match.

www.empiricallabs.com

SM Pro

The MBC502 is an optical multiband compressor. The LF and HF channels each offer controls over level, compression and attack and release times. Switches allow you to mute one of the compression channels so that the other can act as a filter, with the filter's centre frequency determined by the front panel Frequency selector knob setting. The VU meter displays the master level output, while gain reduction is shown on the LED meters. The PEQ505 is a 5-band parametric equaliser and each of its identical channels feature continuously variable level, frequency, and bandwidth controls, an On/Off switch, and a switch for selecting the channel's frequency operation range. The Master output includes a level control, bypass switch, and an LED level meter with peak indicator.

The Phase Box is a phase manipulation tool. The phase can be manipulated by up to 180° with the front panel rotary encoder. Bypass, Low-Cut Filter, and Phase Reverse switches are provided along with Output level adjustment and VU metering. The Pre-Z mic preamp has 80dB of gain with variable input impedance. HP and LP filters offer additional control and signal shaping choices while LME49720 Op-Amps ensure low noise and wide dynamic range. The Tube Box is a single-slot 500-Series microphone preamp that features a Class-A tube preamp, switchable Phantom, phase invert, -20dB pad, and an in-line optical compressor.

SM Pro offers a range of 500-Series racks, ranging from the JuiceRack 1 (single-slot power source for operating one module) to the JuiceRack 8 (19-inch rack-mount power source designed to house eight). JuiceBlock 3 is a portable power block designed to house three modules.

www.smproaudio.com

Eventide

Eventide's DDL-500 is a digital delay that features 10 seconds of delay at 192kHz and a design that keeps the amount of digital circuitry to the minimum. Soft saturation clipping, LP filter, feedback, insert loop, relay bypass, and +20dB boost are all analogue. Delay time can be varied manually by connecting an LFO to the remote input to allow short delays to be used for comb filter or flanging effects. The DDL-500 is also capable of extremely long delays (up to 160s at 16kHz) to allowing long passages to be captured for looping.

www.eventide.com

Spotlight: Maag Audio

Maag Audio's EQ2 is a 2-band EQ. It features Maag's Air Band (shelf boost from 2.5-40kHz) and a Low Mid Frequency bell boost from Sub to 1.4kHz with tight and wide curves and an input attenuation control providing -12.5dB of attenuation. The EQ2's Air Band boasts an additional 15kHz frequency selection.

The EQ4 is a one-channel 6-band equaliser with Air Band. EQ adjustments are obtained with minimal phase shift and detented controls allow for easily recallable settings. The PREQ4 is a one-channel microphone preamplifier with Air Band. Features include 65dB adjustable gain, phase reverse capability, 70Hz HP filter, +48V phantom power, and -20dB pad.

www.maagaudio.com

Daking

Daking's Mic Pre 500 single-channel microphone/instrument preamplifier module is derived from the company's Mic Pre One freestanding unit. The preamp has switchable phase, 20dB mic input pad, +48V phantom power, and a selectable 1/4-inch line/Hi-Z instrument input. Like the Mic Pre One, the Mic Pre 500 shares the gain structure and Class-A, fully-discrete transistor circuitry design of Daking's Mic Pre IV. The front panel controls include a variable HP filter (0-200Hz) and continuously variable input gain. It also includes an eight-segment tricolour LED with simultaneous VU and Peak.

The Comp 500 is an easy-to-use VCA compressor/limiter module that has been designed to perform and sound similar to the FET circuitry found in Daking's other compressor products, even though it uses a VCA. Compression is set with one knob, ranging from Less to More and Release time is switchable between Fast (0.5ms) and Auto — the Auto setting engages a dual time constant. Attack can be switched between Fast (1ms) and Slow (16ms), while Ratio is switchable between Compressor and Limiter modes, setting a 3:1 or 15:1 ratio. There is also a hard-wire Bypass switch. A Stereo switch is provided that allows up to six units to be linked. The eight-segment meter is selectable between gain reduction or output levels and offers VU ballistics with a floating peak.

www.transaudiogroup.com

Warm Audio

The WA12 500 Discrete mic pre uses custom-designed Cinemag input and output transformers. Other features include 71dB of gain, a Tone button (to switch the input impedance from 600Ohm to 150Ohm and change the tone of the mic and Hi-Z inputs), 48V phantom, 20dB pad, and a 2MOhm true Hi-Z front panel input (to send the instrument signal through the entire circuit, including Cinemag transformers and the discrete amplifier).

www.warmaudio.com

Audio Maintenance Limited

The AML 54F50 is a Class-A compressor and limiter module that occupies three slots in a 500-Series rack. Populated with Carnhill transformers, this British-built module offers make up gain of 0-20dB in 2dB steps; compression ratio of 1.5:1, 2:1, 3:1, 4:1, and 6:1; dual attack speeds (100µs and 5ms); recovery release times of 400ms, 800ms, 1.6s, and Auto; and threshold settings from 4-12dBu (in 1dB steps). AML offers pairs of 54F50s in a dual racked unit with a mono stereo switch or in a 10-slot rack with a mono switch.

www.audiomaintenance.com

Rupert Neve Designs

Based on the Portico 5017 Mobile Pre, the 517 is a transformer-coupled preamp, compressor, and DI with Vari-Phase — used to adjust phase incrementally, Silk — reduces negative feedback and adjusts the frequency spectrum to provide a very sweet and musical performance — and DI/mic blending capabilities. The 511 Mic Pre with Silk incorporates the preamp circuitry from the 517, the sweepable HP filter from the Portico 5012 Duo Mic Preamp, and a variable Silk circuit from the Portico II Channel. The 511 can be used for mic or line sources and has a polarity reverse switch and a 12dB/octave swept HP filter, while the Silk Red mode can be engaged to add thickness and sparkle in the high end as the Texture level is increased.

The 542 Tape Emulator is a follow-up to the Portico 5042 Tape Emulator and delivers a simulation of classic tape sound through the inclusion of tape drive circuitry. The True Tape drive circuit works by feeding a tiny magnetic record head, which, in turn, is coupled to a correctly-equalised replay amplifier. As the voltage rises on the record head, saturation increases, and a soft-clip circuit engages at higher levels to round off peak transients. The sound of the tape circuit can be further modified with selectable 15 and 30ips modes and a pre/post-tape blend control.

The 543 is a mono compressor-limiter with feed-forward/feed-back modes, Peak/RMS detection, and a built-in sidechain HP filter. It has individually controllable threshold, attack, release, makeup gain, ratio, sidechain HPF, Feed-forward/Feed-back selection, and Peak/RMS detection modes. With the compressor inactive, the 543 may be used as a transformer-coupled, high-performance line amplifier. Two 543s may be linked for stereo operation. The 551 Inductor EQ is designed by Rupert Neve. Featuring three bands of EQ inspired by his most prized vintage designs it has custom-wound inductors, transformers, and Class-A gain blocks.

RND re-entered the proprietary modular processing fray with its Shelford Series — named after Little Shelford, near Cambridge, UK, where Rupert Neve crafted a series of preamplifier and equaliser designs. The 5051 EQ/Compressor combines a classic 3-band EQ based on Rupert's vintage designs with the power and flexibility of the Portico II compressor, while the 5052 echoes the simple and definitive 1073 feature set with a vertically-orientated microphone preamplifier, HP filter, and 3-band inductor EQ, also incorporating modern capabilities like the variable Silk/Texture control from the Portico II series and simultaneous pre/post 'tape' operation. His first fully-discrete mixing design in more than 30 years, the 5051 and 5052 may also be fitted into any of three available vertical racks for standalone usage.

www.rupertneve.com

Inward Connections

The Inward Connections Magnum 500-Series Preamp uses two new VF-600 discrete amp blocks instead of the standard SPA-690 to produce a much warmer sounding response when compared to its discontinued MPD-500 predecessor. The unit has phantom power, phase reverse, -20dB pad, Hi-Z low level instrument line input, 12-position rotary trim (5dB per step), three high-pass filter switches, an output level rotary control, and balanced input and output transformers.

The Brat is a 4-band parametric equaliser also using VF-600 discrete amp blocks for warmth and definition. It features High Band (sweepable from 1.2-25kHz with peak/shelf select switch), Mid High Band (sweepable from 300Hz-7kHz), Mid Lo Band (sweepable from 80Hz-1.6kHz), and Lo Band (sweepable from 20Hz-300Hz with a peak/shelf select switch) with +/-12dB cut and boost level for all bands to provide the shaping tools to solve any demanding EQ application. Again, using VF-600 all-discrete amp blocks, Inward Connections claims that The Brute compressor/limiter is well suited to obtaining a 'high-end' vocal sound. Its Optocell gain reduction circuitry is identical to the renowned TSL-3 Vac-Rac tube limiter.

www.inwardconnections.com

Purple Audio

Cans II is a discrete stereo headphone amp and control room preamplifier. It uses a KDJ3 Op-Amp for mono and a KDJ5 Op-Amp for its output. Features include a 10kOhm balanced input, 15dBu gain, individual channel cuts, channel swap, channel sum to mono, and precision matched stereo control. Cans II ships with an XLRF to XLRF adaptor for stereo input.

Moiyn is an all-discrete 8-channel summing amp that only works in the ninth slot in Purple Audio's Sweet Ten 10-slot 500-Series rack. When a Moiyn is installed into that ninth slot, slots 1 to 8 become input modules to the Moiyn itself. While using the Moiyn to sum the outputs of the modules in slots 1 to 8, users can still route the output XLRs of slots 1 to 8 to a DAW or tape machine. The inputs for slot 9 serves as a stereo input to the Moiyn mix bus for cascading multiple mixers — for example, one Sweet Ten loaded with a Moiyn can be used to handle a drum mix and cascaded into a second Sweet Ten loaded with a Moiyn to handle the whole mix as a fully discrete 16-channel summing mixer with a combination of almost any 500-Series modules as the channel modules.

www.purpleaudio.com

LaChapell Audio

The Model 583E is a vacuum tube microphone preamplifier with EQ. It features the same amplifier stage found on LaChapell Audio's 583S vacuum tube preamp, including the Jensen JT-115k input transformer coupled with a transformerless 3-band EQ section with sweepable frequency controls and cut/boost settings of +/-8dB. The EQ can be run as an integrated EQ serving the preamp as its own autonomous module where both units run independently. Like its counterpart found on the Model 583E, the Model 503 EQ offers low distortion and minimal phase deviation. It includes several features not found on the Model 583E, including increased cut/boost range (+/-12dB); LP filter (5kHz and 10kHz); HP filter (50Hz and 150Hz); and +/1 trim gain stage.

www.lachapellaudio.com

Weiss

The Weiss A1 is a microphone/line preamplifier with a de-esser. The sidechain of the de-esser uses DSP enabling the use of a very low noise element. Two modules can be sidechain linked for stereo operation. The A1 has a transformer-balanced, wide-level range input with a 24dB pad for line level sensitivity. The input gain (15dB-60dB) is set with a 16-position switch. Also included is a LP filter and phantom power. The output is transformer balanced and has an additional potentiometer to set the output level independently from the levels that the de-esser is running at. The de-esser section uses a bandpass filter to split the audio band. The bandpass filter parameters are the centre frequency and the Q. The Threshold parameter defines the sensitivity of the de-esser sidechain and a few attack and release times and ratios can be selected via DIP switches on the bottom of the unit.

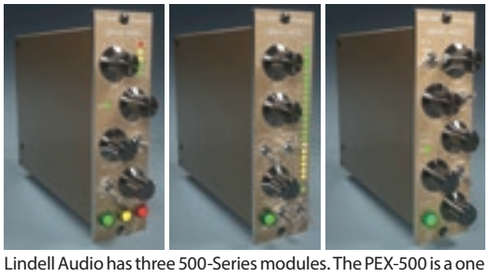
www.weiss.ch

Grace Design

Grace Design's m502 is a compressor the heart of which is an optical attenuator that provides a wide range of dynamic control yet remains neutral, open, and musical. It includes input and output level, threshold, attack, release, ratio, and make up gain controls alongside balanced inputs and outputs (with parallel XLR and 1/4-inch TRS connectors) and a 1/4-inch TRS jack for stereo link or sidechain input (including connectivity for the Radial Workhorse bus feed). 10-segment LED gain reduction meters make for easy reading and Grace Design offers a five-year transferrable warranty on parts and labour.

www.gracedesign.com

Lindell Audio



Lindell Audio has three 500-Series modules. The PEX-500 is a one channel transformer coupled passive Pultec EQ in an all-discrete design based on the 990 amplifier. It has transformer-coupled balanced inputs and balanced outputs; 15dB of gain; 3-step switched LF boost at 30Hz, 60Hz, and 100Hz; HF boost at 6kHz, 10kHz, and 16kHz; and HF attenuation at 10kHz, 15kHz, and 20kHz. It also has true hardwire EQ bypass.

The 6X-500 is a one channel transformer coupled mic preamplifier and passive 2-band Pultec equaliser. It offers 80dB of gain with switched LF boost at 30Hz, 60Hz, and 100Hz, and HF boost at 6kHz, 10kHz, and 16kHz. High boost bandwidth is selectable on the PCB and there's polarity reverse, 48V phantom power and 5-LED VU metering.

The 7X-5000 is a one channel compressor/limiter and is what Lindell describes as its take on the '1176 sound'. It's a FET design that incorporates a High Pass Sidechain Filter and a Mix knob to mix between the dry and wet signal. It has 3-step switched Attack times, Release times, High Pass Sidechain Filter (Off, 100Hz, 300Hz), and Ratio (4:1, 12:1, 100:1 'all in'). It has transformer-balanced output and a 20-LED gain reduction meter.

www.lindellaudio.se

DANGEROUS
COMPRESSOR
ENGAGE
VU / COMPRESSION
MICHAEL JAMES
New Radicals, Hole, Chicago, L7...
"A must have in my world. It's a refreshing complement to the currently fashionable boxes that indiscriminately add color."
THE COMPRESSOR
GAIN REDUCTION WITHOUT SACRIFICE
Now available in the UK. To find a Dangerous Music Dealer, please visit www.masteringworks.com

Radial Engineering

Radial's Tank Driver module enables the user to use the spring reverb in a guitar amplifier and bring this effect into a recording system. It features a wet dry mix to balance the signal and shimmer and boom controls to add top-end or extra boom to the tone. For older reverbs that may be less sensitive, a drive switch increases the output to compensate. The Tossover module enables users to divide the frequency bands of an audio signal to separately process lows and highs or combine the two in series to create a band-pass filter. The front panel sports one set of controls focused on the mid and high frequencies, while the other separates the mid and bass frequencies so each can be processed individually. The frequency knob lets users adjust the cut-off point and the amplitude knob permits adjustment of the signal level. To intensify the effect, each frequency divider is equipped with a three-position filter that may be set with a 12, 18, or 24dB per octave slope.

The Submix 4x1 mixer module has four front-mounted 1/4-inch input connectors with individual level controls. Unlike a traditional mixer that requires a separate input pad and level control, the Submix employs Radial's dual-gang Accustate input circuit that lets you adjust sensitivity with gain. The mixer has a virtual-earth mix bus design that enables it to be cascaded without adding noise to create larger formats.

The ChainDrive is an audio distribution module that accepts a balanced or unbalanced source and distributes the signal to four front-panel 1/4-inch TRS outputs with four front panel level controls. The ChainDrive can also distribute a stereo programme using TRS connectors following the tip-left, ring-right, sleeve-ground convention. Once connected, ChainDrive lets you create multiband compression, feeding several guitar amps and effects simultaneously, or taking a stereo programme and sending it to various digital processors, dynamic controllers, and effects at the same time.

The PreComp 500-Series channel strip begins with a preamp equipped with Radial's Accustate gain control that simultaneously sets the output and sensitivity to maximise signal-to-noise. A compressor follows with adjustable threshold, compression ratio, and make up gain control that transitions from soft-knee to hard knee as compression increases. A slow-fast switch makes it easy to set the PreComp for percussive instruments or smoother tracks, such as vocals.

The PreMax channel strip has a low-noise Op-Amp input coupled with Radial's Accustate gain control. The preamp feeds a 3-band shelving EQ and there's also an HP filter, Phantom power, and polarity reverse. The PhazeQ phase adjustment module also works as a phase cancelling device and summing equaliser. It enables you to phase-align two signals, such as on a snare when using top and bottom mics or when combining a direct feed with a room mic. With phase summing, you can boost frequencies to create effects. PhazeQ has discrete Class-A electronics and a variable phase control shifts the incoming signal from 0° to 180° and then extends the effect to 360° using a polarity invert switch. The blend control is set to 100% wet when the PhazeQ is used in tandem with another track. When used by itself, the blend is rotated counterclockwise to set the desired wet-dry signal mix. A variable LP filter allows the engineer to dial out high frequencies thereby only applying phase cancellation to the bottom end.

Spotlight: JDK Audio

JDK Audio is a technology brand, developed and engineered by API out of a desire to use newer technology that does not comfortably fit into the API product mix. The V10 is a single-channel mic preamp sharing circuitry with a single channel of the R20 mic preamp. As such, it has 54dB of mic-level gain, 45dB of instrument-level gain, padding, phantom power, and phase inversion. The V12 is a single-channel compressor in 500-Series format sharing circuitry with a single channel of the R22 compressor (itself a replica of the inline compressor on ATI Paragon consoles). It offers the patented Thrust circuit that preserves high-frequency content even under aggressive compression settings and is paired with threshold, ratio, knee, and gain make up controls.

www.jdkaudio.com

The Q3 is a 3-band induction coil EQ module. Described as 'sweet sounding' it features a top-end boost circuit; a mid-range cut circuit; a bass boost circuit; and a gain make-up control to offset the typical signal loss that occurs when using passive EQ designs. Each of the three bands employ a 12-position Grayhill switch with a different preset curve at each position. The Q4 is a 100% discrete state-variable Class-A parametric equaliser. As a line level device, it has four EQ bands with fixed low and high frequency shelving at 100Hz and 10kHz, plus two semi-parametric mid bands that span between 300Hz-2.4kHz and 1-12kHz. Each mid band is also equipped with a choice of wide or narrow Q and all frequencies have 12dB of boost or cut.

Radial's range of power racks extends beyond the standard Workhorse, to include the standalone WR-8

Workhorse, an 8-slot 500-Series mixer. Individual XLR inputs and outputs are complemented by parallel 1/4-inch TRS connectors and 25-pin D-subs. The PowerStrip is a single-space 500-Series power supply designed to house three 500-Series compatible modules.

It is equipped with XLR I-Os and 1/4-inch TRS connectors. These can be used as 'multi' outputs or for cross-patching purposes. Once modules are inserted, a 'feed' switch immediately sends the output from the first slot into the second and then to the third, making it easy to create the ultimate channel strip by combining modules. The Cube is a 500-Series desktop power supply designed to house three 500-Series modules. Topping the power racks range is the Powerhouse, a 10-slot power rack.

It includes a Feed function and stereo link. Each channel slot is equipped with separate XLR I-O with parallel 1/4-inch TRS connectors for splitting the signal or acting as a patchbay. The Powerhouse is equipped with Omniport 1/4-inch TRS that accommodates special functions on 500-Series modules.

www.radialeng.com

Millennia Media

Millennia Media's AD-596 A-DC is based on the AD-R96 design, a feature of which is the company's proprietary True-Lock-Clock performance with an external clock. Its performance is indistinguishable between internal and external clock. Analogue inputs and digital AES outputs are handled by DB-25 connectors.

The HV-35 microphone preamplifier is based on Millennia's HV-3 Series and has front panel instrument input, DC coupled ribbon mic switch with 10dB gain boost setting, 80Hz roll-off filter, 48V phantom power, 15dB pad, polarity flip, and continuously variable gain control. The HV-37 is a pair of 500 series HV-35 preamp cards housed in a 1U rack with an onboard universal power supply. The rear panel has XLR mic inputs and XLR balanced line outs. It can be powered directly by mains voltages between 100V and 240V.

www.mil-media.com

AMS-Neve

Using the same circuitry as Neve's 88R console, the 88RLB also includes new features such as REGenerate and Direct Injection. The 88RLB is a Class A/B amplifier design with its own special transformer at the input stage and with an electronically balanced output stage.

The 1073LB 500-Series mono mic preamp module retains the sonic characteristics of its original predecessor by using the same architecture, matching components, and original hand-wound transformers. With new features like a fine Trim control, switchable microphone input impedance, signal presence LED, intelligent protected switching of front combi-XLR input connector, and Neve's Audio Processing Insert design, the 1073LB expands on the original Class-A design.

The 1073LBEQ provides a Neve 1073 EQ circuit, using the same EQ design as the classic 1073 module. A Line level input feeds an electronically balanced EQ circuit with three bands of adjustable EQ and a High Pass filter, which can be switched in/out. The output is also an electronically balanced Line level output.

The Neve 2264ALB is a recreation of the 2264A limiter/compressor. It uses hand-wound transformers to the original specs and adds a Slow Attack switch that changes the attack time to 12ms. Like the 1073LBEQ, it incorporates Neve's Audio Processing Insert design, allowing it to be inserted between the input and output stages of a 1073LB module.

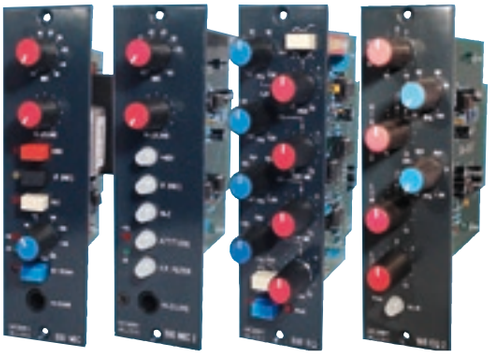
www.ams-neve.com

CharterOak Acoustics

CharterOak's K500 Ultra Parametric 3-Band Equaliser claims high headroom, low distortion, and three ultra wide bands. The Low Band centre frequency sweeps 20Hz-500Hz, the constantly variable Mid sweeps 500Hz-10kHz, High Band sweeps 800Hz-20kHz, and the bandwidth sweeps 0.50-2 octaves in all three Bands. Additionally, there are Bell and Shelf selection switches in high and low bands and a 'divide by 10' switch in the Mid Band. There's +/-12dB of gain in 2dB steps via 11-position rotary switches and a -24dB cut selection on each band. High Pass Filter is -10dB@20kHz and Low Pass Filter is -10dB@20kHz.

www.charteroakacoustics.com

Ocean Audio



There are currently six 500-Series modules in the Ocean Audio product line-up and also a range of consoles — called The Ark — that can be loaded with 500-Series modules. The 500 MicPre one is a mic/line preamp module with additional Hi-Z/line input on the front panel. The MicPre two is a transistor front-ended mic/line preamp module with additional Hi-Z/line input on the front panel. The 500 EQ one is a classic design 4-band equaliser module with 4-band sweep and Malcolm Toft Signature Sound. The 500 EQ two is a classic design 4-band equaliser module with 2-band sweep and Malcolm Toft Signature Sound.

Ocean Audio Mix modules turn a 500-Series rack into a modular mixer. Use one 500 O/P Mix Master module with as many 500 I/P Mix Input modules as the rack will hold to create a multichannel mixer with EQ and aux sends per channel.

www.oceanaudio.co.uk

Focusrite

The Red Series mic preamp has returned in the compact form of the Red 1 500 Series Mic Pre. The module is made in England and uses the same circuit design and components as the original, the same Lundahl LL1538 input transformer and custom Carnhill output transformer, Grayhill gold-plated gain switch with a gain range of 66dB, switchable phantom power, polarity invert, and a backlit VU meter with calibration.

www.focusrite.com

Earthworks

The 521 ZDT is Earthworks' first 500-Series module. Based on the ZDT preamp technology designed by David Blackmer, the 521 ZDT provides a 'wire with gain' option to the rack. The solid state ZDT 521 has switchable phantom power, polarity invert, and peak amplitude clip detection. The transformerless output stage will drive long cable runs without loss. Gain is switchable from 5dB-60dB in 5dB steps.

www.earthworksaudio.com

Realios

Originally designed for the Olympic Studios console by Dick Swettenham with guidance from engineer Keith Grant, the A9052 EQ is available. It provides extremely high and low shelving bands as well as a two-position HP filter. An addition to the original three-transistor make up gain stage is a Class-A transistor output stage capable of driving the most demanding of loads. Also included is a step-down input transformer and step-up output transformer that provide 6dB greater than the 500-Series voltage rails normally allow.

The Realios TLCompressor combines high-quality electronically-balanced audio elements with a tungsten lamp as a gain reduction element to provide smooth, artefact-free, soft-knee levelling. Features include stepped Input (-15 to +22.5dB gain in 2.5dB steps) and Output (-5 to +22.5dB gain in 2.5dB steps) attenuators, hard Bypass, Threshold indicator lamp, and balanced input and output.

www.realios.com

Safe Sound Audio

Safe Sound Audio's Stereo Toolbox is a stereo bus compressor capable of processing audio in left/right or mid/side. A stereo width control, sweepable from mono through stereo to extra wide, is available in all modes of operation independent of whether the user is processing in LR or MS. The unit accepts balanced stereo and delivers transformer balanced outputs at levels up to +28dBu. It is based on Safe Sound's 'dynamic tracking' circuitry, which allows the attack and release times to be dynamically modified by analogue processing to track the dynamic content of the audio. The unit features a sweepable HP filter that can be selected to operate during LR or MS compression in the mono sidechain to control low frequency pumping, or it can be switched to operate in the sidechain to remove low end boom.

www.safesoundaudio.co.uk

Serpent Audio

Serpent Audio's SB4001 500-Series stereo bus compressor has quad VCAs, six ratios, 10 attack times, high pass/boost/slope sidechain filters, wet/dry blend control, external (key) input, stepped release settings and classic and alternate auto release. There's also a Grind Mode for valve-style harmonic drive. The Chimera is billed as a faithful replication of the classic LA-3A design featuring all-discrete circuit design, Class-AB transistor output, true T4B optical cell, and transformer-balanced input and output.

www.serpentaudio.com

Atlas Pro Audio

APA's Leviathan compressor is inspired by the LA-3A and LA-2A's 'set and forget' style programme-dependent compression with its Vintage auto mode. As a discrete Class-A single-ended design with iron core transformers on input and output, features include variable attack, release, ratio, and Punch low frequency sidechain. It can be closely stereo matched and stereo linked.

www.atlasproaudio.com

Tonelux Designs

Tonelux Designs' MP5A is a discrete mic preamp with Direct Input on the front panel. This is transformer coupled and has a 20dB Pad switch that affects both the mic and direct input, a 48V phantom switch, and a Polarity (phase) switch. The Combo XLR/Direct input is for use with Hi-Z instruments. The Tilt control works with the Mic input and Direct input has its own Tilt EQ In switch. When turned up, the tilt control has a 0-6dB boost on the high end while cutting the low end by the same amount. If it is turned down, the tilt will boost the low end up to 6dB and cut the high end up to 6dB. Included with the MP5A is the ability to PFL the output to an external preamplifier or to the mixer/master section for previewing the signal directly off the mic pre output.

The EQ5P is a discrete parametric equaliser. Its front panel does not have a dedicated Q control, but Q control is in relation to the Boost and Cut controls, using a Constant Energy Curve (or Proportional Q) to keep the bandwidth wider at lower boost or cut levels and narrower at higher or boost or cut levels. The high frequency control has a shelving button instead of a peak button. With 4 bands of controls, each of the lower ones have slightly different frequencies, allowing the lower band to go to 16Hz, while the upper 2 bands are identical.

The TX5C is designed to address complex compression issues. Its ability to handle in-module parallel mixing of the dry and compressed signals means that users can sidechain an instrument with itself to come up with a blend of the original and compressed signal. The TX5C uses a proprietary all-discrete TX-240 Op-Amp and all-discrete TX-260 output stage together with a TX-280 transformer. It includes the ability to fade between feed-back and feed-forward compression using the Type control. The TX5C has the ability to over-compress with the Ratio control causing the compressor to compress an increase in signal of 10dB with a gain reduction of up to -8dB. By inserting a Tilt control into the sidechain of the RMS detector, users can increase the highs and decrease the lows going into the RMS detector.

Tonelux also manufactures the V4 Roadster, a self-powered 500-Series racking system that can power up to eight modules with the X4 Expander.

www.tonelux.com

Roger Schult

The V2350 line amplifier module is matched with the API 500-Series and can be integrated into any configuration. To provide for fast settings, the V2350 is equipped with a central mode 11-step switch with which the source selection can be made and amplification adjusted in 10dB steps. A separate 41-step level control allows additional fine adjustment to be made with 0.25dB resolution. The V2350a is a low-Z-matching amplifier module for a wide range of signal sources with low impedance. A continuous impedance potentiometer allows adjustment of signal sources between 10Ohm to 2.5kOhm. The impedance pot works logarithmically and its impact can be increased by a factor of four up to 10kOhm. Conversely, the V2350b is a Hi-Z-matching amplifier module for a wide range of signal sources with high impedance.

www.rs-mastering.de

Spotlight: Crane Song

The Crane Song Falcon is a valve compressor and has three attack and three release settings, hard and soft knee choices for compression or limiting, two different audio path sounds, wet-dry mixing for parallel compression and can be linked. The audio path colour is changed by modifying the tube circuit for negative feedback while the optical-like quality of the compressor adds more versatility.

Syren is a classic sounding tube preamp built using a dual triode circuit with a 12AX7 tube. It features a dual gain stage circuit and allows overdrive effects. A switch selectable Hi-Z input is included. The low cut filter is at 90Hz and is 24dB/octave. The pad has -15dB and -25dB settings to allow a wide input range of signals.

www.cranesong.co

ShinyBox

The Guillotine is a Digitally-Controlled Analogue High/Low Pass Filter module. Using a 12dB/octave filter, it provides a means of returning to exact settings. The Guillotine has 32 selectable frequencies per band and provides visual feedback for the high (15Hz-1.4kHz) and low (28kHz-450Hz) bands using cascading LEDs — 32 for each band.

www.shinybox.com

Shadow Hills

The Shadow Hills Dual Vandergraph is a direct descendant of the Shadow Hills Mastering Compressor. This stereo compressor's discrete audio path is Class-A and features Shadow Hills' custom Iron Transformers. The Dual Vandergraph's Compression and Output controls are Swiss-made, 24-position attenuators. The Ratio switch selects between 1.2:1, 2.5:1, 4:1, and 8:1. In addition to changing ratios, each selection changes preset attack and recover times. The Sidechain Filter Matrix controls the frequency sensitivity of the sidechain with positions for 90Hz, 150Hz, 250Hz, and Bandpass.

www.shadowhillsindustries.com

XQP

The 535 Program EQ provides basic 2-band EQ with two frequency choices per band. Based on the active version of the Baxandall circuit, the 535 includes an amplifier for each band to avoid interaction. The slopes of the 535 are of the very gentle shelving variety. A maximum of 4dB/octave is achieved at full boost/cut. The 541 Optical compressor is a feedback-style compressor, designed

for smooth, unobtrusive gain reduction. It uses Silonex optocouplers for gain reduction and subtractive metering. Its control set is minimal, comprising a ten-segment LED gain reduction meter, a threshold control operating in a dbx-style counterclockwise direction with an arbitrary orientation, and make up gain. The 545 Optical Disrupter is an optical compressor that creates an asymmetrical waveform as it compresses low frequencies, resulting in smooth, second-order harmonic distortion without clipping and associated harshness. The 570 Mic Preamp is a simple design featuring a Lundahl LL1576 input transformer and a continuously variable gain pot (ranging from 28-65dB), 20dB pad, phantom power switch with LED, and ten-step LED peak meter.

www.xqpaudio.com

Valley People

The Dyna-mite in its peak limit mode is a fast limiter that does not 'squash' the programme as it can respond to transients in around 6ms, allowing some of the fast rising waveforms to pass through. There is gain recovery coupling in the control, so it works as a high ratio compressor when the threshold is set below 0dB. Thanks to an auto-release circuit that prevents the release circuit from interfering with the attack portion of the control waveform, the Dyna-mite also works as an expander and gate. The output circuitry is servo balanced and capable of driving 600Ohm into +24dB.

www.valleypeople.com

Moog Music

The Ladder is a Dynamic Transistor Ladder Filter that is based on Bob Moog's original ladder filter designs. It sports a smooth sounding, all-analogue LP and HP filter section and variable Attack and Release controls allow the envelope to be opened and closed. The Amount control in Positive or Negative mode allows for mid to extreme sound shaping and manipulation. There's a Resonance control. The 2-Pole/4-Pole switch allows users to select how aggressive the filter slope is. 2-Pole is equal to 12dB/octave and 4-Pole is 24dB/octave.

The Moog Analog Delay is a MIDI-synchable module with an analogue signal path, front panel MIDI, and an assignable Tap Tempo/CV jack. It offers between 35-800ms and also has a 6-Waveshape LFO that allows users to create time-based effects. The LFO can be accessed via MIDI or the free VST/AU/RTAS Analog Delay plug-in editor.

www.moogmusic.com

Alta Moda Audio

The successor to the AM-20 equaliser, the AM-25 is a 4-band parametric equaliser module. It offers four continuously variable and overlapping frequency bands: shelving or peak/dip Low Band, continuously variable from 20-120Hz; parametric Low Mid Band with variable Q (65Hz-2kHz); parametric High Mid Band with variable Q (1-7.5kHz); shelving High Band with variable Q (4-20kHz).

Alta Moda's first mic preamp, the AM-30, is discrete Class-A transformerless and can be smoothly overdriven by increasing input level or gain, The Gain control is an 11-position rotary while the Output control is a continuous fader with an additional 6dB of overall boost. A direct input on 1/4-inch jack is included. The Hippo is a high-performance bus compressor based on VCA topology. It features attack, release, and ratio and a six-position HPF on the sidechain while a six-position Warmth control adds harmonic distortion to fatten tracks.

www.altamodaaudio.com

Thermionic Culture

The Nightingale is the second of Thermionic Culture's half-rack 4U format units, the first being the Freebird 3-channel value EQ. It is an all-valve affair with two ECC832 for mic amp/EQ, 6AQ8, 5965, and 5726 in the compressor section. Two mic amps with a useful valve EQ have their own outputs (XLR unbalanced) which can give +20dBu. These can be combined or taken individually into a vari-mu compressor-based on The Phoenix stereo valve compressor, but with a little more 'attitude'. The compressor section has its own input (balanced XLR) which can be selected instead of a feed from the mic amps, also an XLR balanced output capable of +25dBu.

www.thermionicculture.com

Standard Audio

The Standard Audio Stretch multiband compression unit is inspired by 70s and 80s tape noise reduction units. The input signal is split into LF (20-110Hz), MF (110Hz-3kHz), HF3 (3-20kHz), and HF9 (9-20kHz) frequency bands and then individually compressed with ratio, attack, and release settings tailored to each frequency band. The Input control allows the user to set the gain structure through the unit so that the desired amount of compression occurs while a post-mix circuit Output level control allows the engineer to set the output level to DAW/tape without altering the mix blend. A Filter/Compression pushbutton lets the user cycle continuously through seven different filter combinations.

www.standard-audio.com

JLM Audio

The BA500 mic preamp module uses a discrete 99V Op-Amp for 60dB of gain and an impedance control range from 200Hz-3kHz. It has a large white LED-backlit 34mm VU meter for output level. The TG500 mic preamp module is a two-FET, six-transistor Class-A design providing 75dB of gain. It is based on early Neve, BBC, and EMI equipment with simple transistor stages that have been redesigned to include additional features. The LA500 compressor is a redesign of the LA-3A/LA-2A-type compressor with additional features, including 5:1 and 10:1 ratios (in addition to 3:1) and sidechain HPF switching between flat, 100Hz, and 200Hz, so the low end can be compressed or removed from the sidechain. A make-up level pot varies between 0-20dB of gain.

The FC500 Enhanced FET Compressor is a redesign of the 1176LN-type compressor with a fully variable Ratio control (from 3:1 to 20:1) and sidechain HPF (from 10-100Hz). Compression linking is possible with two or more FC500s using the link switch. The HPM500 is a six-channel headphone mixer module that fits in the spare space next to the API Lunchbox power supply so no 500 slots are wasted in the Lunchbox itself. Since there are 12 wires to solder to the back plane output XLRs, an IDC plug that has to be removed from the power supply to the mixer car, and a short extension cable plugged from the mixer to the power supply, it is recommended that the HPM500 is installed by a technician.

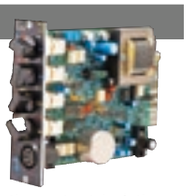
www.jlmaudio.com

Avedis Audio Electronics

The E27 is a 3-band equaliser module with nine selectable frequencies per band. The all-discrete design also boasts +/-16dB boost and cut using a continuously variable potentiometer, pushbutton shelving option for low and high frequencies, high headroom, and low noise. Jensen transformers couple the input and output. Custom machined aluminium knobs adorn Gold-plated rotary switches. Avedis Audio also manufactures the R52, a dual rack compatible with select Series-500 modules. It features an internally regulated power supply with phantom power, a Link switch for connecting channels, and an LED power supply indicator.

www.avedisaudio.com

JCF Audio



Aimed fairly and squarely at the front end of the recording chain, where broad strokes of sound adjustment need to be made quickly, the JCF Audio More 'n' Less is a channel amplifier with mic (configurable as front only or front and rear) and line (rear only) inputs. No switching is needed between these inputs. It has an Output level control, single knob compression and simultaneous make up gain function, a static boost equaliser — Top or Bottom and a dynamic loss equaliser. A Cinemag steel 1:2 output transformer is used for floating output, isolation, and drive, while a four-position pad optimises drive of the Cinemag mic input transformer.

www.jcfaudio.com

JMK Audio

The JM-115C is a transformer-coupled VCA-based compressor using true RMS detection similar to the dbx 160VU. Compression ratio starts at 1.25:1, rising to 20:1. The JM-120 is a dual Hi-Z input DI preamp with one common (Jensen) transformer-balanced output. The Guitar input is specifically designed for guitar input impedance, gain structure (maximum 48dB), bandwidth all optimised to produce a clean and quiet signal. The Bass/Keyboard input is designed for the higher output of a bass guitar or keyboard and optimised for bass.

www.jmkaudio.com

Inside and behind the rack

Not all modules and racks are created equal. We talk to Radial Engineering president PETER JANIS about the ins and the outs.

The 500 series is a modular system that enables the user to bring together preamps, equalisers, dynamics and effects and combine them to create unique sounds and push creativity during the recording process. Each module fits inside one or two slots — two slots being stereo — and then these are connected on the rear panel of the power rack using standard XLR cables. The general intent is that the modules work at +4dB line levels to facilitate inter-module connectivity.

Today's 500 series format is a grandfathered 'standard' that originated with several companies, including API, Aphex, and DBX. Over the years API stuck with the format and more recently there has been enormous growth in the number of manufacturers producing 500 series modules and the racks to power them from. The enduring attraction of this modular processing package is that it is compact, portable and allows the user to mix and match modules and to be able to sample premium brand products in an affordable way.

Lots of manufacturers make 500 racks, what operating principles are they basing their racks on?

It seems that most companies that offer racks are offering variations on the original API spec. In other words, they make a box with a bunch of slots and then provide power via a 15-pin card edge connector following the pin configuration that was originally set out by API. EDAC tends to be the connector of choice as these have two conductive sides for improved connectivity.

The powering of the racks seem to range from about 100 milliamps per slot and up. As API set out the standard at 130 milliamps, this seems to be the predominant format. The power supplies provide a shared pool of current from which the user then determines which modules can be used.

With the advent of power hungry tube devices and the demand for vintage solid state devices to be moved into the 500 series format, it seems that more power is beneficial as many of these devices were designed with greater power availability than the original 500 series format.

How did Radial do what is has with its 500 racks?

Radial started with the idea that a power rack could do a lot more if the modules could be mixed and matched in series or in parallel. This prompted us to incorporate a mixer in the Workhorse. We also thought that replacing patch cables with feed switches could simplify setups and keep the rear patch panel clear. We then took the position that the rear panel could actually work as a patchbay if ¼-inch TRS cables could be incorporated. Finally, because API had left a couple of pins free in its latest designs, we adopted them for the Onmniport jack. This 'module specific' port enables a manufacturer to add a feature such as an insert, key, instrument input or whatever, as an extra function to their module without changing the original spec.

Once we got things going, we then quickly discovered many 'home-built' modules are not necessarily built properly. During testing, in some cases, they actually caught fire. So we added safety fuses that basically shut down the racks should a fault occur. This not only protects the Radial Workhorse power rack, but also protects modules and your home!

After the Workhorse was completed, we then added various other rack formats to suit different customer needs for 3, 6 and 10 spaces.

State the case for a 'standard' for the 500 series rack.

Another discovery was that there was no clear standard. We spent months researching older designs and could not find any clear documentation that set a clear standard for size, power, or pin configurations. We even found API modules that did not fit inside their own racks. You have to keep in mind that API has gone through different ownerships since the 1970s and old designs have been kept for legacy sake. We contacted API for clarity and they suggested that we send them our modules for testing to see if they fit and would not cause problems. This is the basis for their VPR alliance.

Anyone who has been in our business for any length of time knows that the audio industry is extremely slow at developing clear standards. We have been in the digital world for over 30 years and still today one digital console cannot always speak to others. We felt the best solution would be to suggest a free standard and we posted this on our website. It includes mechanical designs, electrical requirements and everything you need to build a module.

Once the Whos-Doc specification was posted, we then contacted the AES to let them know that we would be pleased to support a new standard that all manufacturers could adopt. A couple of the people from the standards committee have contacted us and we are now waiting to hear of further developments. Whether the AES adopts a higher or lower voltage standard, we are prepared to support it as we believe this to be the healthiest way forward. We believe that the end user should be able to buy any brand of module, plug it into a rack and it should work. If every manufacturer goes about optimising the power racks for their own modules, the industry will never be unified.

One of the most frustrating aspects of the 'non-standard' is the way modules must be fit into place. Aligning the 15-pin card edge connector is painful and can lead to electrical problems if not inserted properly. To address the problem, we started by adding a simple slide-in tray that aligns the card edge vertically. Most recently, we tooled up the trays with special nylon inserts that align the modules horizontally so that they slide into place without fiddling around. This makes it easy to quickly plug in modules and change the recording setup on the fly. Any manufacturer who adopts the Whos-Doc standard will find that their modules fit easily, which in turn will reduce service problems.

What are the realistic power requirements of a 500 series rack and what are they able to power?

The issue with powering is two-fold. On the one hand is the in-rush current and on the other the actual powering of the modules. We have found some companies whose products require excessive in-rush current to bring them up. The workaround is sequencing the modules by plugging them in, one at a time. A good electronic engineer can design a preamp, EQ or compressor with less than 100 milliamps of current. With some attention, the in-rush current can be reduced so that it does not exceed the power of the supply as the capacitors charge.

How real are concerns that certain racks do not generate enough juice for power hungry modules like valve modules?

When tubes are employed, the power requirements increase to where 200 to 300 milliamps are required. One merely checks the power supply for available current and then adds up the requirements to ensure you do not exceed the available current.

We came up with a clever workaround for the PowerTube module that pulls current in form alternating sides of the power supply to reduce the demands when using several of these tube preamps together in a rack.

Set out a power consumption and distribution model for a rack full of typical modules.

Say you have a Radial PowerHouse 10-slot rack with 1600 milliamps of current, this gives you an average of 160 milliamps per slot. If you have four tube preamps that require 250 milliamps each, two EQs that need 100 milliamps and a couple of compressor that need 150 milliamps, you add them up and you get 1500 milliamps of required current — this leaves you with 100 milliamps of headroom. If you plug in six tube preamps — at 250 milliamps each and an EQ that needs 100 milliamps — you will be at the threshold of 1600 milliamps which means you may not enjoy the maximum performance. It is probably a good idea to leave some slots empty if you can so that you have extra headroom.

How real are people's concerns about the power issues?

I suppose most racks will do a reasonable job when it comes to powering. We have been told by several major manufacturers that the Radial racks are the ones that are truly made correctly. The real issue in our mind is safety. When a console manufacturer is creating a channel strip it is in full control of all of the signals going in and out. In the 500 world, you are guessing and hoping that each of the modules are properly constructed and safe. This is why we go the extra mile by incorporating electronic fuses in each channel. Should a fault occur, the rack will power down until the fault is removed and then simply comes back to life.

What other limitations and concerns are there about 500 Series racks and modules?

The standard in itself is limiting. It is designed around an analogue mono format, so you cannot easily integrate stereo into a single wide module. Also, because the standard originated in the 1970s digital was never part of the design. So developing a digital strategy is somewhat limiting.

In our view, the best way around this is to incorporate some sort of digital I-O in the master section. This has recently been introduced by Aphex in its new rack and we are looking at other methods of implementing something similar. This would enable the user to go from a laptop computer to the 500 series power rack and back in order to take advantage of the character and creative approach that analogue brings to recording.

BLUE SOUNDS BETTER

EQ2

resolution
AWARDS 2014
• NOMINATED •
REWARDING QUALITY AND INNOVATION

FEATURING THE ORIGINAL AIR BAND®

"After 20+ years in the business there aren't many things that come along that make me go WOW, but Mäag Audio® has done it!"

–Russ Russell
Producer, Engineer, Mixer, Musician
(Napalm Death, Dimmu Borgir, Wildhearts, Exploited, Megadeth...)

©2014 Mäag Audio, LLC

www.maagaudio.com

mäag AUDIO®